

CLAIM AMENDMENTS

1. (Previously Presented) A probe for deploying electrode arrays, ~~said probe~~ comprising:

a shaft having a distal end and a proximal end;

a first array of electrodes mounted on the shaft and configured to shift between a retracted configuration and a deployed configuration having a concave face; and

a second array of electrodes mounted on the shaft at a location spaced-apart proximally from the first array of electrodes, wherein the second electrode array is configured to shift between a retracted and a deployed configuration having a concave face;

wherein the concave face of the first electrode array faces the concave face of the second electrode array when the arrays are deployed, and the deployed first and second electrode arrays are configured to necrose a volume of tissue therebetween when electrical energy is applied between the first and second electrode arrays.

2. (Original) A probe as in claim 1, wherein the first and second electrode arrays each comprise a plurality of individual electrodes which initially move axially and then evert as they are deployed.

3. (Original) A probe as in claim 1, wherein the shaft has a self-penetrating tip.

4. (Previously Presented) A probe as in claim 1, wherein the shaft has at least ~~once~~ one cavity for receiving the first and second electrode arrays when retracted.

5. (Previously Presented) A probe as in claim 1, wherein the shaft has at least one cavity for receiving the first electrode array when retracted and at least a second cavity for receiving the second electrode array when retracted.

6. (Previously Presented) A probe as in claim 1, further comprising:

a first rod connected to the first electrode array and slidably disposed in the shaft, wherein distal advancement of the first rod relative to the shaft causes the first electrode array to deploy distally; and

a second rod connected to the second electrode array and slidably disposed in the shaft, wherein proximal retraction of the second rod relative to the shaft causes the second electrode array to deploy proximally.

7. (Previously Presented) A probe as in claim 1, wherein the first electrode array spans a planar area in the range between 3 cm^2 to 20 cm^2 when deployed, the second electrode array spans a planar area in the range between 3 cm^2 and 20 cm^2 when deployed, and the first and second areas are spaced-apart along a line between their respective centers by a distance in the range between 2 cm to 10 cm.

8-10. (Cancelled).

11. (Previously Presented) A probe as in claim 1, further comprising a first axial conductor extending proximally along the shaft from the first electrode array to a location distal to the second electrode array, the first axial conductor being electrically coupled to the first electrode array.

12. (Original) A probe as in claim 11, wherein the first axial conductor extends proximally beyond the proximal terminus of the first electrode array so that the first axial

conductor lies closer to the second electrode array than does any portion of the first electrode array.

13. (Previously Presented) A probe as in claim 11, further comprising a second axial conductor extending distally along the shaft from the second electrode array to a location proximal to the first axial conductor so that a gap exists between the first and second axial conductors, the second axial conductor being electrically coupled to the second electrode array.

14. (Original) A probe as in claim 13, wherein the second axial conductor extends distally beyond the distal terminus of the second electrode array so that the second axial conductor lies closer to the first electrode array than does any portion of the second electrode array.

15. (Original) A probe as in claim 13, wherein the distance between the inner termini of the first and second axial conductors is from 0.25 to 0.75 of the distance between the inner termini of the innermost portions of the first and second electrode arrays.

16. (Previously Presented) A method for treating a treatment region in tissue, comprising:

deploying a first array of electrodes in tissue on one side of the treatment region, wherein the first electrode array has a concave face;

deploying a second array of electrodes in tissue along an axis with the first electrode array on another side of the treatment region, wherein the second electrode array has a concave face wherein the concave face of the first electrode array faces the concave face of the second electrode array when the arrays are deployed;

applying electrical energy between the deployed first and second electrode arrays to necrose the tissue region therebetween.

17. (Original) A method as in claim 16, wherein deploying the first electrode array comprises introducing a first probe through tissue to a location on one side of the treatment region and advancing a first plurality of at least three electrodes from the probe in an everting pattern.

18. (Original) A method as in claim 17, wherein deploying the second electrode array comprises advancing a second plurality of at least three electrodes from the probe in an everting pattern at a location on the other side of the treatment region.

19. (Original) A method as in claim 17, wherein deploying the second electrode array comprises introducing a second probe through tissue to a location on the other side of the treatment region and advancing a plurality of at least three electrodes in an everting pattern.

20. (Previously Presented) A method as in any of claims 16-19, wherein the tissue is selected from the group consisting of liver, lung, kidney, pancreas, stomach, uterus, and spleen.

21. (Previously Presented) A method as in any of claims 16-19, wherein the treatment region is a tumor.

22. (Previously Presented) A method as in claim 16, wherein electrical current is applied at a frequency in the range from 300 kHz to 1.2 MHz.

23. (Previously Presented) A method as in claim 16, wherein electrical current is applied at a power in the range from 50W to 300W.

24. (Cancelled)

25. (Previously Presented) A method as in any of claims 16-19, wherein the first and second electrode arrays each span a planar area in the range between 3 cm^2 to 20 cm^2 , and wherein the first and second electrode arrays are spaced-apart along a line between their respective centers by a distance in the range between 2 cm to 10 cm.

26-27. (Cancelled)

28. (Previously Presented) A method as in any of claims 16-19, wherein the first electrode array includes a first axial conductor extending at least part of the way to the second electrode array along the axis therebetween.

29. (Original) A method as in claim 28, wherein the first axial conductor extends proximally beyond the proximal terminus of the first electrode array so that the first axial conductor lies closer to the second electrode array than does any portion of the first electrode array.

30. (Previously Presented) A method as in claim 28, wherein the second electrode array includes a second axial conductor extending part of the way to the first electrode array along the axis therebetween and wherein there is a gap between termini of the first axial conductor and the second axial conductor.

31. (Original) A method as in claim 30, wherein the second axial conductor extends distally beyond the distal terminus of the second electrode array so that the second axial conductor lies closer to the first electrode array than does any portion of the second electrode array.

32. (Original) A method as in claim 31, wherein the distance between inner termini of the first and second axial conductors is from 0.25 to 0.75 of the distance between the inner termini of the innermost portions of the first and second electrode arrays.

33. (Previously Presented) A method for bipolar radiofrequency necrosis of tissue, comprising:

deploying a first array of electrodes in tissue on one side of a treatment region, wherein the first electrode array has a concave face and an axial conductor extending in an axial direction from the concave face;

deploying a second array of electrodes in tissue on another side of the treatment region spaced-apart from the first electrode array, wherein the second electrode array has a concave face and an axial conductor extending in an axial direction opposed to the axial conductor on the first electrode array and wherein the concave face of the first electrode array faces the concave face of the second electrode array when the arrays are deployed; and

applying radiofrequency current to the tissue between the deployed first and second electrode arrays to necrose the tissue.

34. (Previously Presented) A method as in claim 33, wherein deploying the concave face of the first electrode array comprises introducing a first probe through tissue to a location on one side of the treatment region and advancing a first plurality of at least three electrodes from the probe in a radially diverging pattern.

35. (Original) A method as in claim 34, wherein the diverging pattern is everting.

36. (Previously Presented) A method as in claim 34 or 35, wherein deploying the concave second electrode array comprises advancing a second plurality of at least three electrodes from the probe in a radially diverging pattern at a location on the other side of the treatment region.

37. (Original) A method as in claim 36, wherein the diverging pattern is everting.

38. (Previously Presented) A method as in claim 34 or 35, wherein deploying the concave face of the second electrode array comprises introducing a second probe through tissue to a location on the other side of the treatment region and advancing a plurality of at least three electrodes in a radially diverging pattern.

39. (Original) A method as in claim 38, wherein the diverging pattern is everting.

40. (Original) A method as in claims 33, 34, or 35, wherein the tissue is selected from the group consisting of liver, lung, kidney, pancreas, stomach, uterus, and spleen.

41. (Original) A method as in claim 40, wherein the treatment region comprises a tumor lesion.

42. (Currently Amended) A method as in claims 33, wherein the bipolar radiofrequency current is applied at a frequency in the range from 300 kHz to 1.2 MHz.

43. (Currently Amended) A method as in claim 33, wherein the bipolar radiofrequency current is applied at a power in the range from 50W to 300W.

44. (Original) A method as in claims 33, 34, or 35, wherein applying the bipolar radiofrequency current comprises coupling one pole of a radiofrequency power supply to the first electrode array and another pole of the radiofrequency power supply to the second electrode array and energizing the power supply.

45. (Previously Presented) A method as in claims 33, 34, or 35, wherein the concave face of the first electrode array spans a planar area in the range between 3 cm² to 20 cm², the concave face of the second electrode array spans a planar area in the range between 3 cm² and 20 cm², and the first and second electrode arrays are spaced-apart along an axial line between their respective centers by a distance in the range between 2 cm and 10 cm.

46. (Original) A method as in claim 45, wherein the termini of axial conductors of the first and second electrode arrays are spaced-apart in the axial direction by a distance in the range between 0.5 cm and 5 cm.

47. (Cancelled).

48. (Original) A method as in claim 33, wherein the distance between the termini of the first and second axial conductors is from 0.25 to 0.75 of the distance between the inner termini of the innermost portions of the first and second electrode arrays.

49-50. (Cancelled).

51. (Previously Presented) A probe for deploying electrode arrays, comprising:
a shaft having a distal end and a proximal end;
a first array of electrodes mounted on the shaft and configured to shift between a retracted configuration and a deployed configuration having a concave face; and
a second array of electrodes mounted on the shaft at a location spaced-apart proximally from the first array of electrodes, wherein the second electrode array is configured to shift between a retracted and a deployed configuration having a concave face;

wherein the concave face of the first electrode array faces the concave face of the second electrode array when the arrays are deployed, and the deployed first and second electrode arrays are configured to necrose a volume of tissue therebetween when electrical energy is applied between the first and second electrical arrays.

52. (Original) A probe as in claim 51, wherein the first and second electrode arrays each comprise a plurality of individual electrodes which initially move axially and then evert as they are deployed.

53. (Original) A probe as in claim 51, wherein the shaft has a self-penetrating tip.

54. (Previously Presented) A probe as in claim 51 or 53, wherein the shaft has at least one cavity for receiving the first and second electrode arrays when retracted.

55. (Original) A probe as in claim 51 or 53, wherein the shaft has at least one cavity for receiving the first electrode array when retracted and at least a second cavity for receiving the second electrode array when retracted.

56. (Original) A probe as in claim 51 or 53, further comprising:

a first rod connected to the first electrode array and slidably disposed in the shaft, wherein distal advancement of the first rod relative to the shaft causes the first electrode array to deploy distally; and

a second rod connected to the second electrode array and slidably disposed in the shaft, wherein proximal retraction of the second rod relative to the shaft causes the second electrode array to deploy proximally.

57. (Original) A probe as in claim 56, wherein the first and second rods may be deployed separately.

58. (Original) A probe as in claim 51 or 53, wherein the first electrode array spans a planar area in the range between 3 cm^2 to 20 cm^2 when deployed, the second electrode array spans a planar area in the range between 3 cm^2 and 20 cm^2 when deployed, and the first and second areas are spaced-apart along a line between their respective centers by a distance in the range between 2 cm to 10 cm.

59-60. (Cancelled)

61. (Previously Presented) A probe as in claim 51 or 53, wherein the first electrode array and second electrode array are electrically isolated from each other, further comprising a first connector for connecting the first electrode array to one pole of a power supply and a second connector for connecting the second electrode array to a second pole of a power supply.

62. (Previously Presented) A probe as in claim 61, further comprising a first axial conductor extending proximally along the shaft from the first electrode array to a location distal to the second electrode array, the first axial conductor being electrically coupled to the first electrode array.

63. (Original) A probe as in claim 62, wherein the first axial conductor extends proximally beyond the proximal terminus of the first electrode array so that the first axial conductor lies closer to the second electrode array than does any portion of the first electrode array.

64. (Previously Presented) A probe as in claim 62, further comprising a second axial conductor extending distally along the shaft from the second electrode array to a location proximal to the first axial conductor so that a gap exists between the termini of the first and

second axial conductors, the second axial conductor being electrically coupled to the second electrode array.

65. (Original) A probe as in claim 64, wherein the second axial conductor extends distally beyond the distal terminus of the second electrode array so that the second axial conductor lies closer to the first electrode array than does any portion of the second electrode array.

66. (Original) A probe as in claim 64, wherein the distance between the inner termini of the first and second axial conductors is from 0.25 to 0.75 of the distance between the inner termini of the innermost portions of the first and second electrode arrays.

67. (Previously Presented) A probe as in claim 1, wherein the first electrode array and second electrode array are electrically isolated from each other, further comprising a first connector for connecting the first electrode array to one pole of a power supply and a second connector for connecting the second electrode array to a second pole of a power supply.

68. (Previously Presented) A probe as in claim 1, wherein the first and second electrode arrays are configured to necrose the volume of tissue axially outward from a center of the volume of tissue.

69. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is defined by outward perimeters of the first and second electrode arrays.

70. (Previously Presented) A probe as in claim 1, wherein the entire lengths of the electrodes of the first and second arrays are uninsulated.

71. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 30 cm³.

72. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 70 cm³.

73. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 150 cm³.

74. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is within the range of 30-150 cm³.

75. (Previously Presented) A probe as in claim 1, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is within the range of 50-70 cm³.

76. (Previously Presented) A probe as in claim 1, wherein the first and second electrode arrays are completely spaced apart in the axial direction when in the deployed configuration.

77. (Previously Presented) A probe as in claim 1, wherein the concave face of the first electrode array points in the distal direction, and the concave face of the second electrode array points in the proximal direction when in the deployed configuration.

78. (Previously Presented) A probe as in claim 77, wherein the first electrode array deploys from a proximal axial location of the shaft, and the second electrode array deploys from a distal axial location of the shaft.

79. (Previously Presented) A probe as in claim 77, wherein the concave face of the first electrode array is proximal to the concave face of the second electrode array when in the deployed configuration.

80. (Previously Presented) A method as in claim 16, wherein applying the electrical current comprises coupling one pole of a radiofrequency power supply to the first electrode array and another pole of the radiofrequency power supply to the second electrode array and energizing the power supply.

81. (Previously Presented) A method as in claim 16, wherein the tissue region is necrosed axially outward from a center of the tissue region.

82. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is defined by outward perimeters of the first and second electrode arrays.

83. (Previously Presented) A method as in claim 16, wherein the entire lengths of the electrodes of the first and second arrays are uninsulated.

84. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is at least 30 cm³.

85. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is at least 70 cm³.

86. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is at least 150 cm³.

87. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is within the range of 30-150 cm³.

88. (Previously Presented) A method as in claim 16, wherein the necrosed volume of tissue is within the range of 50-70 cm³.

89. (Previously Presented) A method as in claim 16, wherein the deployed first and second electrode arrays are completely spaced apart in the axial direction.

90. (Previously Presented) A method as in claim 16, wherein the concave face of the first electrode array points in the distal direction, and the concave face of the second electrode array points in the proximal direction when the first and second electrode arrays are deployed.

91. (Previously Presented) A method as in claim 90, wherein first electrode array deploys from an axial location that is proximal to an axial location from which the second electrode array deploys.

92. (Previously Presented) A method as in claim 90, wherein the concave face of the first electrode array is proximal to the concave face of the second electrode array when the first and second electrode arrays are deployed.

93. (Previously Presented) A method as in claim 33, wherein the tissue is necrosed axially outward from a center of the tissue region.

94. (Previously Presented) A method as in claim 33, wherein the necrosed tissue is defined by outward perimeters of the first and second electrode arrays.

95. (Previously Presented) A method as in claim 33, wherein the entire lengths of the electrodes of the first and second arrays are uninsulated.

96. (Previously Presented) A method as in claim 33, wherein the necrosed tissue has a volume of at least 30 cm³.

97. (Previously Presented) A method as in claim 33, wherein the necrosed tissue has a volume of at least 70 cm³.

98. (Previously Presented) A method as in claim 33, wherein the necrosed tissue has a volume of at least 150 cm³.

99. (Previously Presented) A method as in claim 33, wherein the necrosed tissue has a volume within the range of 30-150 cm³.

100. (Previously Presented) A method as in claim 33, wherein the necrosed tissue has a volume within the range of 50-70 cm³.

101. (Previously Presented) A method as in claim 33, wherein the deployed first and second electrode arrays are completely spaced apart in the axial direction.

102. (Previously Presented) A method as in claim 33, wherein the concave face of the first electrode array points in the distal direction, and the concave face of the second electrode array points in the proximal direction when the first and second electrode arrays are deployed.

103. (Previously Presented) A method as in claim 102, wherein first electrode array deploys from an axial location that is proximal to an axial location from which the second electrode array deploys.

104. (Previously Presented) A method as in claim 102, wherein the concave face of the first electrode array is proximal to the concave face of the second electrode array when the first and second electrode arrays are deployed.

105. (Previously Presented) A probe as in claim 51, wherein the first electrode array is electrically isolated from the second electrode array to permit the arrays to be connected to a power supply for bipolar operation.

106. (Previously Presented) A probe as in claim 51, wherein the first and second electrode arrays are configured to necrose the volume of tissue axially outward from a center of the volume of tissue.

107. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is defined by outward perimeters of the first and second electrode arrays.

108. (Previously Presented) A probe as in claim 51, wherein the entire lengths of the electrodes of the first and second arrays are uninsulated.

109. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 30 cm³.

110. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 70 cm³.

111. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is at least 150 cm³.

112. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is within the range of 30-150 cm³.

113. (Previously Presented) A probe as in claim 51, wherein the volume of tissue configured to be necrosed by the first and second electrode arrays is within the range of 50-70 cm³.

114. (Previously Presented) A probe as in claim 51, wherein the first and second electrode arrays are completely spaced apart in the axial direction when in the deployed configuration.

115. (Previously Presented) A probe as in claim 51, wherein the concave face of the first electrode array points in the distal direction, and the concave face of the second electrode array points in the proximal direction when in the deployed configuration.

116. (Previously Presented) A probe as in claim 115, wherein the first electrode array deploys from a proximal axial location of the shaft, and the second electrode array deploys from a distal axial location of the shaft.

117. (Previously Presented) A probe as in claim 115, wherein the concave face of the first electrode array is proximal to the concave face of the second electrode array when in the deployed configuration.